Hardware User’s Manual

Rotarod

References:
LE8205 (76-0770), LE8305 (76-0771), LE8505 (76-0772), LE8355 (76-0773)

Version:
1.0
Limitation of Liability

PANLAB does not accept responsibility, under any circumstances, for any harm or damage caused directly or indirectly by the incorrect interpretation of what is expressed in the pages of this manual. Some symbols may have more than one interpretation by professionals unaccustomed to their usage. PANLAB reserves the right to modify, in part or in total, the contents of this document without notice.
1. SYMBOLS TABLE

Recognising the symbols used in the manual will help to understand their meaning:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning about operations that must not be done because they can damage the equipment</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Warning about operations that must be done, otherwise the user can be exposed to a hazard.</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Protection terminal ground connection.</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Warning about a hot surface which temperature may exceed 65ºC</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Warning about a metal surface that can supply electrical shock when it’s touched.</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Decontamination of equipments prior to disposal at the end of their operative life</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>Waste Electrical and Electronic Equipment Directive (WEEE)</td>
<td>![Symbol]</td>
</tr>
</tbody>
</table>

2. GOOD LABORATORY PRACTICE

Check all units periodically and after periods of storage to ensure they are still fit for purpose. Investigate all failures which may indicate a need for service or repair.

Good laboratory practice recommends that the unit be periodically serviced to ensure the unit is suitable for purpose. You must follow preventive maintenance instructions. In case equipment has to be serviced you can arrange this through your distributor. Prior to Inspection, Servicing, Repair or Return of Laboratory Equipment the unit must be cleaned and decontaminated.

**Decontamination prior to equipment disposal**

In use this product may have been in contact with bio hazardous materials and might therefore carry infectious material. Before disposal the unit and accessories should all be thoroughly decontaminated according to your local environmental safety laws.

*Rotarod*
3. UNPACKING AND EQUIPMENT INSTALLATION

WARNING: Failure to follow the instructions in this section may cause equipment faults or injury to the user.

A. No special equipment is required for lifting but you should consult your local regulations for safe handling and lifting of the equipment.
B. Inspect the instrument for any signs of damage caused during transit. If any damage is discovered, do not use the instrument and report the problem to your supplier.
C. Ensure all transport locks are removed before use. The original packing has been especially designed to protect the instrument during transportation. It is therefore recommended to keep the original carton with its foam parts and accessories box for re-use in case of future shipments. Warranty claims are void if improper packing results in damage during transport.
D. Place the equipment on a flat surface and leave at least 10 cm of free space between the rear panel of the device and the wall. Never place the equipment in zones with vibration or direct sunlight.
E. Once the equipment is installed in the final place, the main power switch must be easily accessible.
F. Only use power cords that have been supplied with the equipment. In case that you have to replace them, the spare ones must have the same specs that the original ones.
G. Make sure that the AC voltage in the electrical network is the same as the voltage selected in the equipment. Never connect the equipment to a power outlet with voltage outside these limits.

For electrical safety reasons you only can connect equipment to power outlets provided with earth connections.

This equipment can be used in installations with category II over-voltage according to the General Safety Rules.

The manufacturer accepts no responsibility for improper use of the equipment or the consequences of use other than that for which it has been designed.

Rotarod
PC Control

Some of these instruments are designed to be controlled from a PC. To preserve the integrity of the equipment it is essential that the attached PC itself conforms to basic safety and EMC standards and is set up in accordance with the manufacturers’ instructions. If in doubt consult the information that came with your PC. In common with all computer operation the following safety precautions are advised.

- To reduce the chance of eye strain, set up the PC display with the correct viewing position, free from glare and with appropriate brightness and contrast settings.

- To reduce the chance of physical strain, set up the PC display, keyboard and mouse with correct ergonomic positioning, according to your local safety guidelines.
4. MAINTENANCE

WARNING: Failure to follow the instructions in this section may cause equipment fault.

- PRESS KEYS SOFTLY – Lightly pressing the keys is sufficient to activate them.

- Equipment does not require being disinfected, but cleaned for removing urine, feces and odor. To do so, we recommend using a wet cloth or paper with soap (which has no strong odor). NEVER USE ABRASIVE PRODUCTS OR DISSOLVENTS.

- NEVER pour water or liquids on the equipment.

- Once you have finished using the equipment turn it off with the main switch. Clean and check the equipment so that it is in optimal condition for its next use.
## 5. TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SYMBOLS TABLE</td>
<td>2</td>
</tr>
<tr>
<td>2. GOOD LABORATORY PRACTICE</td>
<td>2</td>
</tr>
<tr>
<td>3. UNPACKING AND EQUIPMENT INSTALATION</td>
<td>3</td>
</tr>
<tr>
<td>4. MAINTENANCE</td>
<td>5</td>
</tr>
<tr>
<td>5. TABLE OF CONTENTS</td>
<td>6</td>
</tr>
<tr>
<td>6. INTRODUCTION</td>
<td>7</td>
</tr>
<tr>
<td>7. EQUIPMENT DESCRIPTION</td>
<td>9</td>
</tr>
<tr>
<td>7.1. FRONT PANEL</td>
<td>9</td>
</tr>
<tr>
<td>7.2. REAR PANEL</td>
<td>10</td>
</tr>
<tr>
<td>7.3. ROTAROD</td>
<td>11</td>
</tr>
<tr>
<td>8. EQUIPMENT CONNECTION</td>
<td>12</td>
</tr>
<tr>
<td>9. WORKING WITH THE EQUIPMENT</td>
<td>13</td>
</tr>
<tr>
<td>9.1. CHANGING SETTINGS</td>
<td>13</td>
</tr>
<tr>
<td>9.2. SELECTION OF THE WORKING MODE</td>
<td>14</td>
</tr>
<tr>
<td>9.3. PREPARING THE INSTRUMENT</td>
<td>18</td>
</tr>
<tr>
<td>9.4. CONDUCTING EXPERIMENTS</td>
<td>19</td>
</tr>
<tr>
<td>9.5. MAINTENANCE</td>
<td>23</td>
</tr>
<tr>
<td>9.5.1. REMOVING PARTS</td>
<td>23</td>
</tr>
<tr>
<td>9.5.2. CLEANING THE UNIT</td>
<td>23</td>
</tr>
<tr>
<td>9.5.3. LEVERS FORCE ADJUSTMENT</td>
<td>24</td>
</tr>
<tr>
<td>10. TRANFERING DATA TO A PC (SEDACOM)</td>
<td>25</td>
</tr>
<tr>
<td>11. TROUBLESHOOTING</td>
<td>26</td>
</tr>
<tr>
<td>12. PREVENTIVE MAINTENANCE</td>
<td>27</td>
</tr>
<tr>
<td>13. SPECIFICATIONS</td>
<td>28</td>
</tr>
</tbody>
</table>
6. INTRODUCTION

The LE8205 (76-0770), LE8305 (76-0771), LE8505 (76-0772) and LE8355 (76-0773) ROTAROD units facilitate easy testing of motor activity in rodents. Drug administration, central nervous system damage, disease effects on motor coordination or fatigue can be assessed by measuring the time during which the animal continues walking in a rotating rod.

Figure 1. LE8205 (76-0770) with rod for 5 mice

A central rod (made of Perspex, and knurled to provide adequate grip) divided in sections, rotates at either a constant speed or a steadily accelerating rate (from 4 to 40 rpm in an interval of time ranged from 30 seconds to 10 minutes). The use of acceleration has been reported to produce less variable data.
The ROTAROD can send the information to a PC through its USB cable connection. This makes it possible to store and work with the data independently from the instrument. Simply connect the PC and the ROTAROD with the interconnection cable, and the data generated from the rod will be automatically sent to the PC. Panlab's Sedacom software program needs to be installed previously on the PC (must be purchased separately).

The difference between models is:

- LE8205 (76-0770) is designed to work with up to 5 mice.
- LE8305 (76-0771) is designed to work with up to 4 rats.
- LE8355 (76-0773) is a LE8305 modified, higher and with only two lanes for large rats.
- LE8505 (76-0772) is designed to work with up to 4 rats or 4 mice.
7. EQUIPMENT DESCRIPTION

7.1. FRONT PANEL

- **Start/Stop button**: to start or stop the experiment.

- **Working mode selector**: to choose the desired working mode, constant or acceleration.

- **Rod speed indicators**: show the current and set rod rotation speed.

- **Lane counters**: depending on the rotarod model, this will be from two to five columns:
  1. The first row displays the time that the animals have been on the rod.
  2. The second row displays the rod speed.

- **Hold ramp button**: functional during the Acceleration working mode:
  1. First press of this button starts the rod acceleration and begins the active lane counters recording.
  2. A second press maintains the current rod speed constant.

- **Settings screen**: Displays the settings screen.

*Rotarod*
- **Reset button**: Clears the lane counters indicators to zero.

- **Speed increase/decrease button**: Increments/decrements by one unit the rod speed. Applies only to constant speed working mode.

- **Speed screen**: Displays the Set Speed screen. Applies only to constant speed working mode.

- **Ramp screen**: Displays the Set Ramp screen. Applies only to acceleration working mode.

### 7.2. REAR PANEL

#### Figure 3. Rear Panel

- **USB**: USB B-type female connector used to connect the Rotarod to a computer USB port. Data is sent to the Sedacom software through this connector.

- **POWER**: Male panel jack used to connect the Rotarod to the AC-DC adapter.

- **SWITCH**: Main switch used to turn on and off the Rotarod.
The Rotarod LE8305 (76-0771) and the LE8505 (76-0772) have a turning rod with 4 slots. The LE8205 (76-0770) features 5 slots and the LE8355 (76-0773), 2 slots. Rodents (rats or mice depending of the instrument model) are placed in these slots. There is a transparent lid fixed with magnets to the bottom face of the Rotarod to prevent that any animal falls by the bottom part of the lever.

The 4-slot rat models (LE8305 and LE8505 with rats rod) feature an accessory to increase the height of the walls. This accessory, the extension hood, keeps the rats from accessing neighbouring slots.

When the animal falls from the rod, it depresses the lever trip plate at the bottom. This lever is equipped with a switch that detects time.

A large white plastic screw is mounted on the right side of the unit. It keeps the rod in position.
8. EQUIPMENT CONNECTION

The equipment connection is shown in the picture 5.

![Figure 5. Equipment connection](image)

The connections and necessary cables are listed in the following table.

<table>
<thead>
<tr>
<th></th>
<th>FROM</th>
<th>TO</th>
<th>CABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rotarod USB-B type</td>
<td>PC USB Port</td>
<td>USB Cable</td>
</tr>
<tr>
<td>2</td>
<td>AC-DC adapter mains</td>
<td>Mains</td>
<td>Power cord</td>
</tr>
<tr>
<td>3</td>
<td>Rotarod power jack</td>
<td>AC-DC adapter</td>
<td>Jack cable</td>
</tr>
</tbody>
</table>

*Rotarod*
9. WORKING WITH THE EQUIPMENT

Once the equipment is turned on, the start-up screen appears after a few seconds:

![Start-up screen](image)

**Figure 6. Start-up screen**

9.1. CHANGING SETTINGS

The following options can be modified thorough the Settings screen:

![Settings screen](image)

**Figure 7. Settings options**

- Motor direction: Establishes the rod rolling direction: forward and reversed.
- Display backlight: Establishes the percentage of backlight of the display.
9.2. SELECTION OF THE WORKING MODE

A) CONSTANT MODE

- The motor works to provide a speed from 4 to 40 rpm, depending on the needs of the user, who can select the speed either before starting the experiment or when it is already underway. The speed is the same for each lane, as there is a single motor driving the single rod on which all the subjects are moving.
• The starting point of the TIMERS is determined when the relevant LEVER is lifted; each TIMER works independently from the others. The end point of each TIMER is determined when the relevant LEVER is lowered.

B) ACCELERATION MODE

• The motor increases speed automatically and lineally from 4 up to 40 rpm, thus producing a constant acceleration of the rod. The speed is the same for each lane, as there is a single motor driving the single rod on which all the subjects are moving.

• It is possible to determine the ACCELERATION TIME that the rod will take to achieve the maximum speed. The TIME SLOPE may range from 30 seconds up to 10 minutes.

• Once the maximum has been achieved, the rod continues at this speed.

When working in this mode, two states and one optional state exist:

– WAITING:

![Figure 10. Screen in acceleration mode waiting](image)

• This is the first state after pressing the Start button in this mode.

• This is the preparation state of the instrument in order to place the subjects in their respective slot on the rod. The speed of the rod for this phase of preparation is the minimum, 4 rpm.

• Levers must be lifted to be ready to begin the experiment.
ACCELERATION:

- This is the second state after pressing the Hold Ramp button in this mode.
- The motor ramps from 4 to 40 rpm, following the predetermined SLOPE TIME once the Hold Ramp button has been pressed.
- After the ramp is initiated, the ACCELERATION TIME cannot be changed.
- The TIMER counters corresponding to the raised LEVERS, begin recording the time after the Hold Ramp button is pressed.
- Once the relevant LEVER is depressed, the TIMER will show the total rotating time as the end point for that subject on that particular trial.
- When the last subject falls from the rod, the instrument automatically enters the STOP state.

Figure 11. Screen in acceleration mode running
- **ACCELERATION-CONSTANT:**

![RotaRod Model LE8205](image)

**Figure 12. Screen in acceleration-constant mode running**

- This is the third optional state reached after pressing the Hold Ramp button again in this mode.
- The motor stops the acceleration and keeps running constantly in the current rod speed.
- The TIMERS counters corresponding to the raised LEVERS, continue incrementing.
- The end point of each TIMER is marked when the relevant LEVER is lowered.
- When the last subject falls from the rod, the instrument automatically enters into the STOP state.
9.3. PREPARING THE INSTRUMENT

Figure 13. Placing the animal in the roll

- Holding the animal by its tail, swing them up from a position lower than the rod, so that they find themselves walking inside.

- It is advisable to set the cylinder in motion before placing the animals on the rod. Otherwise, by the time the last animal has been seated in position, the first animal may be facing the wrong direction.

- It is also advisable to let the animal familiarize with the rod by having them walk at minimum speed for a few moments.
9.4. CONDUCTING EXPERIMENTS

1) Turn on the instrument using the POWER switch.
2) Lower the LEVERS, this will prevent the timer counters from beginning.
3) Select the desired working mode.
   a) CONSTANT
   1) Establish the desired initial rod speed using the “+”, “-“or “Speed” buttons. The rod will not begin rotating until the “Start” button is pressed.

   ![Set rod speed screen](image)

   2) Press the “Start” button and this will initiate the rod rotation at the set speed in step 1.

   3) If any LEVER remains in the raised position, the message “Place all levers down” will be shown on the display until all the LEVERS are in depressed position.

   4) Place the animals in their respective lanes on the rod, as shown in Section 8.3.

   5) Manually lift the LEVERS to activate the relevant counters for the lanes that will be used in that trial.

   6) Use the “+”, “-“or “Speed” buttons to modify the desired rod speed.
b) **ACCELERATION**

1) The DISPLAY will indicate that the unit remains in WAITING mode. Now select the RAMP TIME using the “Ramp Time” (the acceleration is automatically calculated from this time to reach max rotation speed).

   Edit the ramp time in this box by pressing the numbers in the keypad

2) Press the “Start” button to initiate the rod rotating at the initial constant speed, 4 rpm.
3) Place the animals in their respective lanes on the rod, as shown in Section 8.3.
4) Manually lift the LEVERS for the respective lanes that will be used. If there are no LEVER lifted when the “Hold Ramp” button is pressed in the next step, the display will show the message “Raise levers to activate lanes” until at least one LEVER is lifted.

![Figure 17. Display waiting for activating levers in accelerated mode](image)

5) Press the “Hold Ramp” button. The lifted lane counters start counting time and the ramp starts accelerating the rod rotation.

![Figure 18. Display running in accelerated mode](image)

6) When the last subject falls from the rod, the instrument automatically enters the STOP state.
7) If the START/STOP BUTTON is pressed again, it will interrupt the experiment, halting the acceleration process. The display will continue to show the last time at any of the subjects fell from the rod.

c) **ACCELERATION-CONSTANT**

1) Begin the experiment in Acceleration mode following the steps 1) to 5) as described above.

2) When the ramp speed reaches the desired value, press the “Hold Ramp” button.

3) The rod will continue running at the desired constant speed.

4) The TIME counters will stop when the respective animal falls from the rod and depresses the respective lever.

5) When the last subject falls from the rod and depresses the lever, the instrument automatically enters the STOP state.

6) If the START/STOP BUTTON is pressed again, it will interrupt the experiment, halting the acceleration process. The display will continue to show the last time at which any of the subjects fell from the rod.

---

**Figure 19. Display running in Accelerated-constant mode**
9.5. MAINTENANCE

9.5.1. REMOVING PARTS

1. The cleft on the roll must fit with the one on the box.

2. Use the white screw to fix the roll. It must fit with the hole in the box.

3. The transparent bottom Lid is kept in place thanks to magnets located in the corners of the lid.

Figure 20. Maintenance

9.5.2. CLEANING THE UNIT

WARNING: Do not use organic solvents to clean the unit, as they may damage the Perspex sheets or crack the acrylic front panel of the liquid crystal display.

A dampen cloth and water can be used to clean the equipment and then a dry cloth should be used to dry it.
9.5.3. **LEVERS FORCE ADJUSTMENT**

On the back of the levers there is a screw that is used for adjusting the strength of the levers. If screwed (clockwise), the separation between the lever and the magnet that holds the lever will increase. This will decrease the attraction and the lever will be more sensitive to detection of fall. If on the contrary, it is unscrewed (counter clockwise) the distance to the magnet that holds it will decrease, which will result in an increase of the strength of the lever and less sensitivity to detect a fall from the rod.
10. TRANFERING DATA TO A PC (SEDACOM)

The purchase of the Sedacom software option is needed for transferring the data to a computer (please contact your local provider for more information). The Sedacom software reference is composed by a USB Flash key containing the software Installer, License for use and Sedacom User’s Manual. Follow the next instructions:

- Please refer to the Sedacom User’s Manual for instructions about how to install and use the software with the present device.

- An USB communication cable (provided with the present device) is needed for connecting the present device to the computer in which the Sedacom software is installed. Please refer to the present User’s Manual chapter 7 for instructions on how to connect this cable to the device.
## 11. TROUBLESHOOTING

This table provides instruction to solve the most frequent problems.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The display shows the message “Place all levers down”</td>
<td>• Check that all levers are down.</td>
</tr>
<tr>
<td></td>
<td>• Contact technical service if problem still persists.</td>
</tr>
<tr>
<td>The rod does not turn.</td>
<td>• Check that the rod is properly positioned with the groove coupled to the</td>
</tr>
<tr>
<td></td>
<td>transmission.</td>
</tr>
<tr>
<td></td>
<td>• Contact with technical service if problem still persists.</td>
</tr>
<tr>
<td>In Acceleration mode when pressing the “Hold Ramp” button the display</td>
<td>• Lift one or more levers and press “Hold Ramp” button again.</td>
</tr>
<tr>
<td>shows the message “Raise levers to activate lanes”</td>
<td>• Check that levers are correctly placed.</td>
</tr>
<tr>
<td></td>
<td>• Contact with technical service if problem still persists.</td>
</tr>
</tbody>
</table>
12. **PREVENTIVE MAINTENANCE**

<table>
<thead>
<tr>
<th></th>
<th>EXPERIMENT</th>
<th>4 MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVERS CLEANING</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>ROD CLEANING</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>PLATFORM CLEANING</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>TRANSPARENT BOTTOM LID CLEANING</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>LEVERS STRENGTH ADJUSTMENT(^1)</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

\(^1\)If levers fall with same force adjustment is not necessary.

*Rotarod*
13. SPECIFICATIONS

<table>
<thead>
<tr>
<th>AC TO DC ADAPTER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage:</td>
<td>100-240V–</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50-60 Hz</td>
</tr>
<tr>
<td>Output voltage:</td>
<td>30V=</td>
</tr>
<tr>
<td>Max. output current:</td>
<td>1,666A</td>
</tr>
<tr>
<td>Polarity:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL CONDITIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature:</td>
<td>10°C to +40°C</td>
</tr>
<tr>
<td>Operating relative humidity:</td>
<td>0% to 85% RH, non-condensing</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>0°C to +50°C, non-condensing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMUNICATIONS OUTPUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Interface:</td>
<td>USB</td>
</tr>
<tr>
<td>Connector:</td>
<td>USB-B type</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPEED</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>4 to 40 RPM</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 RPM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCELERATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope from 4 RPM to 40 RPM</td>
<td>30 s to 10 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant speed</td>
<td></td>
</tr>
<tr>
<td>Constant acceleration</td>
<td></td>
</tr>
<tr>
<td>1st constant acceleration then constant speed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIMENTIONS/WEIGHT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Total size (mm)</td>
</tr>
<tr>
<td>LEB205 - mice</td>
<td>390 x 250 x 400</td>
</tr>
<tr>
<td>LEB305 – rat, with hood</td>
<td>390 x 250 x 505</td>
</tr>
<tr>
<td>LEB505 – mice</td>
<td>390 x 250 x 400</td>
</tr>
<tr>
<td>LEB505 – rat, with hood</td>
<td>390 x 250 x 505</td>
</tr>
<tr>
<td>LEB355 - rat, with hood</td>
<td>390 x 250 x 754</td>
</tr>
</tbody>
</table>
**DECLARACIÓN DE CONFORMIDAD**  
**DECLARATION OF CONFORMITY**  
**DECLARATION DE CONFORMITÉ**  

**Nombre del fabricante:** Panlab s.l.u.  
**Manufacturer’s name:** www.panlab.com  
**Nom du fabricant:** info@panlab.com  
**Dirección del fabricante:** Energía, 112  
**Manufacturer’s address:** 08940 Cornellà de Llobregat Barcelona SPAIN  
**Adresse du fabricant:**  

Declara bajo su responsabilidad que el producto:  
**Declares under his responsibility that the product:**  
**Déclare sous sa responsabilité que le produit:**  

**Marcas / Brand / Marque:** PANLAB  
**Modelo / Model / Modèle:** LE8205 (76-0770), (LE8305) 76-0771, LE8505 (76-0772)  

Cumple los requisitos esenciales establecidos por la Unión Europea en las directivas siguientes:  
**Fulfils the essential requirements established by The European Union in the following directives:**  
**Remplit les exigences essentielles établies pour l’Union Européenne selon les directives suivantes:**  

- **2006/95/EC** Directiva de baja tensión / Low Voltage / Basse tension  
- **2012/19/EU** La Directiva de Residuos de Aparatos Eléctricos y Electrónicos (WEEE) / The Waste Electrical and Electronic Equipment Directive (WEEE) / Les déchets d’équipements électriques et électroniques (WEEE)  
- **2011/65/EU** Restricción de ciertas Sustancias Peligrosas en aparatos eléctricos y electrónicos (ROHS) / Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (ROHS) / Restriction de l’utilisation de certaines substances dangereuses dans les équipements électriques et électroniques (ROHS)  
- **2006/42/EC** Directiva mecánica / Machinery directive / Directive mécanique  

Para su evaluación se han aplicado las normas armonizadas siguientes:  
**For its evaluation, the following harmonized standards were applied:**  
**Pour son évaluation, nous avons appliqué les normes harmonisées suivantes:**  

- **Seguridad / Safety / Sécurité:** EN61010-1:2010 Ed.3  
- **EMC:** EN61326-1:2012 Class B  
- **FCC:** FCC47CFR 15B Class A  
- **Safety of machinery:** EN ISO 12100:2010  

*This equipment complies with the limits for class B equipment in accordance with CISPR 11 definition and is classed as a Class A digital device, pursuant to CFR Title 47 part 15 of the FCC Rules and is intended to be used in an industrial environment.*  

En consecuencia, este producto puede incorporar el marcado CE:  
**Consequently, this product can incorporate the CE marking:**  
**En conséquence, ce produit peut incorporer le marquage CE:**  

En representación del fabricante:  
**Manufacturer’s representative:** Carme Canalís  
**En représentation du fabricant:** General Manager Panlab s.l.u., a division of Harvard BioScience  

Cornellà de Llobregat, Spain  
20/02/2015
**Note on environmental protection:**

After the implementation of the European Directive 2002/96/EC in the national legal system, the following applies:

Electrical and electronic devices may not be disposed of with domestic waste. Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose or point of sale. Details to this are defined by the national law of the respective country. This symbol on the product, the instruction manual or the package indicates that a product is subject to these regulations. By recycling, reusing the materials or other forms of utilising old devices, you are making an important contribution to protecting our environment.

**Nota sobre la protección medioambiental:**

Después de la puesta en marcha de la directiva Europea 2002/96/EC en el sistema legislativo nacional, se aplica lo siguiente:

Los aparatos eléctricos y electrónicos, así como pilas y baterías, no se deben tirar a la basura doméstica. El usuario está legalmente obligado a llevar los aparatos eléctricos y electrónicos, así como pilas y baterías, al final de su vida útil a los puntos de recogida municipales o devolverlos al lugar donde los adquirió. Los detalles quedarán definidos por la ley de cada país. El símbolo en el producto, en las instrucciones de uso o en el embalaje hace referencia a ello. Gracias al reciclaje, a la reutilización de materiales o a otras formas de reciclaje de aparatos usados, usted contribuirá de forma importante a la protección de nuestro medio ambiente.

**Remarques concernant la protection de l'environnement :**

Conformément à la directive européenne 2002/96/CE, et afin d'atteindre un certain nombre d'objectifs en matière de protection de l'environnement, les règles suivantes doivent être appliquées.

Elles concernent les déchets d’équipements électriques et électroniques. Le pictogramme "picto" présent sur le produit, son manuel d'utilisation ou son emballage indique que le produit est soumis à cette réglementation. Le consommateur doit retourner le produit usager aux points de collecte prévus à cet effet. Il peut aussi le remettre à un revendeur. En permettant enfin le recyclage des produits, le consommateur contribuera à la protection de notre environnement. C’est un acte écologique.

**Hinweis zum Umweltschutz:**

Ab dem Zeitpunkt der Umsetzung der europäischen Richtlinie 2002/96/EC in nationales Recht gilt folgendes:


**Informazioni per protezione ambientale:**

Dopo l’implementazione della Direttiva Europea 2002/96/EC nel sistema legale nazionale, ci sono le seguenti applicazioni:

I dispositivi elettrici e elettronici non devono essere considerati rifiuti domestici. I consumatori sono obbligati dalla legge a restituire i dispositivi elettrici e elettronici alla fine della loro vita utile ai punti di raccolta collettori preposti per questo scopo o nei punti vendita. Dettagli di quanto riportato sono definiti dalle leggi nazionali di ogni stato. Questo simbolo sul prodotto, sul manuale d’istruzioni o sull’imballo indicano che questo prodotto è soggetto a queste regole. Dal riciclo, e re-utilizzo del materiale o altre forme di utilizzo di dispositivi obsoleti, voi renderete un importante contributo alla protezione dell’ambiente.

**Nota em Protecção Ambiental:**

Após a implementação da directiva comunitária 2002/96/EC no sistema legal nacional, o seguinte aplica-se:

Todos os aparelhos eléctricos e electrónicos não podem ser despejados juntamente com o lixo doméstico. Consumidores estão obrigados por lei a colocar os aparelhos eléctricos e electrónicos sem uso em locais públicos específicos para este efeito ou no ponto de venda. Os detalhes para este processo são definidos por lei pelos respectivos países. Este símbolo no produto, o manual de instruções ou a embalagem indicam que o produto está sujeito a estes regulamentos. Reciclando, reutilizando os materiais dos seus velhos aparelhos, está a fazer uma enorme contribuição para a proteção do ambiente.